
Cutter arbors with tenon drive —
Part 2:
Dimensions of 7/24 taper

Mandrins porte-fraise à entraînement par tenons —
Partie 2: Dimensions des cônes 7/24



Reference number
ISO 3937-2:2008(E)

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Foreword

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The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 3937-2 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 2, *High speed steel cutting tools and their attachments*.

This first edition of ISO 3937-2, together with ISO 3937-1, cancels and replaces ISO 3937:1985, which has been technically revised.

ISO 3937 consists of the following parts, under the general title *Cutter arbors with tenon drive*:

- *Part 1: Dimensions of Morse taper*
- *Part 2: Dimensions of 7/24 taper*
- *Part 3: Dimensions of hollow taper interface with flange contact surface*

Cutter arbors with tenon drive —

Part 2: Dimensions of 7/24 taper

1 Scope

This part of ISO 3937 specifies the dimensions of cutter arbors with tenon drive with 7/24 tapers. It also specifies the dimensions of cutter arbors with tenon drive and enlarged contact surface of the cutters.

The interchangeability dimensions of the milling cutter bearing on the cutter arbor are in conformity with ISO 2780. The dimensions of the retaining screw used are specified in ISO 2780.

7/24 tapers are in conformance with ISO 297 for manual changing and with ISO 7388-1 for automatic changing.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 297, *7/24 tapers for tool shanks for manual changing*

ISO 2768-1, *General tolerances — Part 1: Tolerances for linear and angular dimensions without individual tolerance indications*

ISO 2768-2, *General tolerances — Part 2: Geometrical tolerances for features without individual tolerance indications*

ISO 2780, *Milling cutters with tenon drive — Interchangeability dimensions for cutter arbors — Metric series*

ISO 7388-1, *Tool shanks with 7/24 taper for automatic tool changers — Part 1: Dimensions and designation of shanks of forms A, AD, AF, U, UD and UF*

3 Dimensions

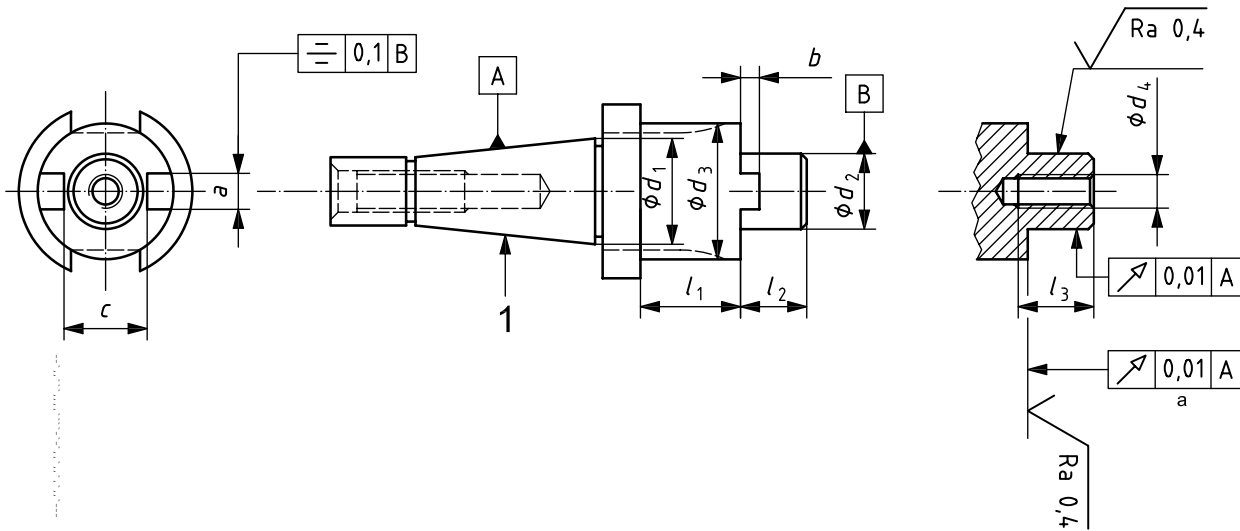
3.1 General

All dimensions and tolerances are given in millimetres. Tolerances not specified shall be of tolerance class “m” in accordance with ISO 2768-1 and of tolerance class “mk” in accordance with ISO 2768-2.

3.2 Arbors with 7/24 taper shanks for manual tool changers

3.2.1 General

The dimensions of arbors with 7/24 taper shanks for manual changers are shown in Figure 1.



Key

1 7/24 taper in accordance with ISO 297

a Not convex.

NOTE This diagram is schematic and is not intended to specify a given design.

Figure 1 — Arbors with 7/24 taper shanks for manual tool changers

3.2.2 Regular arbors with 7/24 taper shanks for manual tool changers

The dimensions of regular arbors with 7/24 taper shanks for manual tool changers are shown in Figure 1 and given in Table 1.

Table 1 — Regular arbors with 7/24 taper shanks for manual tool changers

7/24 taper No.	d_1	d_2	d_3	d_4	l_1	l_2	l_3	a	b	c
		h6	min.			$\begin{matrix} 0 \\ -1 \end{matrix}$				
30	31,75	16	32	M8	25	17	20	8	5	17
		22	40	M10	25	19	22	10	5,6	22,5
		27	48	M12	25	21	26	12	6,3	28,5
40	44,45	16	32	M8	25	17	20	8	5	17
		22	40	M10	25	19	22	10	5,6	22,5
		27	48	M12	25	21	26	12	6,3	28,5
		32	58	M16	40	24	30	14	7	33,5
		40	70	M20	40	27	34	16	8	44,5
45	57,15	22	40	M10	25	19	22	10	5,6	22,5
		27	48	M12	25	21	26	12	6,3	28,5
		32	58	M16	40	24	30	14	7	33,5
		40	70	M20	40	27	34	16	8	44,5
50	69,85	27	48	M12	40	21	26	12	6,3	28,5
		32	58	M16	40	24	30	14	7	33,5
		40	70	M20	40	27	34	16	8	44,5
		50	90	M24	40	30	40	18	9	55

3.2.3 Enlarged contact surface arbors with 7/24 taper shanks for manual tool changers

The dimensions of enlarged arbors with 7/24 taper shanks for manual tool changers are shown in Figure 1 and given in Table 2.

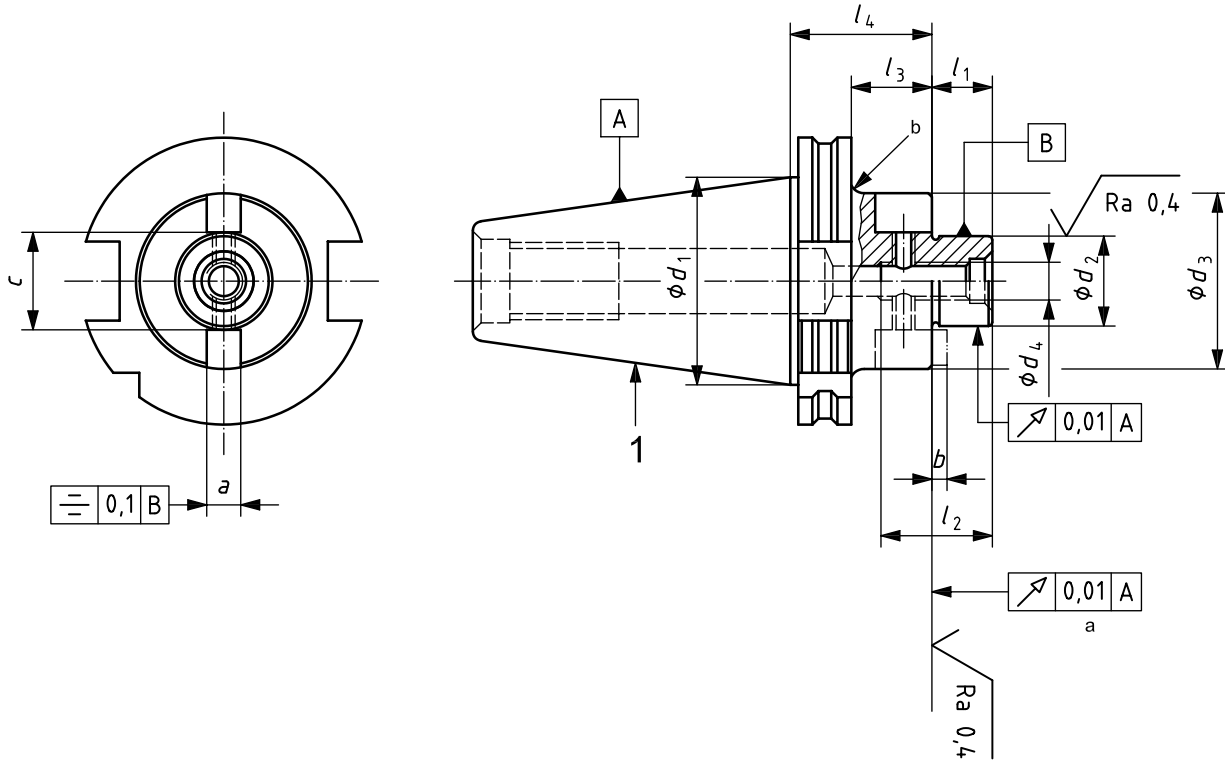
Table 2 — Enlarged contact surface arbors with 7/24 taper shanks for manual tool changers

7/24 taper No.	d_1	d_2	d_3	d_4	l_1	l_2	l_3	a	b	c
		h6	min.			$\begin{matrix} 0 \\ -1 \end{matrix}$				
30	31,75	22	50	M10	25	19	28	10	5,6	24,5
		27	60	M12	25	21	32	12	6,3	30,5
40	44,45	22	50	M10	25	19	28	10	5,6	24,5
		27	60	M12	25	21	32	12	6,3	30,5
		32	78	M16	40	24	36	14	7	33,5
		40	89	M20	40	27	45	16	8	44,5
		50	120	M24	40	30	50	18	9	55
50	69,85	27	60	M12	25	21	32	12	6,3	30,5
		32	78	M16	40	24	36	14	7	33,5
		40	89	M20	40	27	45	16	8	44,5
		50	120	M24	40	30	50	18	9	55

3.3 Arbors with 7/24 taper shanks for automatic tool changers

3.3.1 Regular arbors with 7/24 taper shanks for automatic tool changers

The dimensions of regular arbors with 7/24 taper shanks for automatic tool changers are shown in Figure 2 and given in Table 3.



Key

- 1 7/24 taper in accordance with ISO 7388-1
- a Not convex.
- b If required, undercut in accordance with ISO 7388-1.

NOTE This diagram is schematic and is not intended to specify a given design.

Figure 2 — Regular arbors with 7/24 taper shanks for automatic tool changers

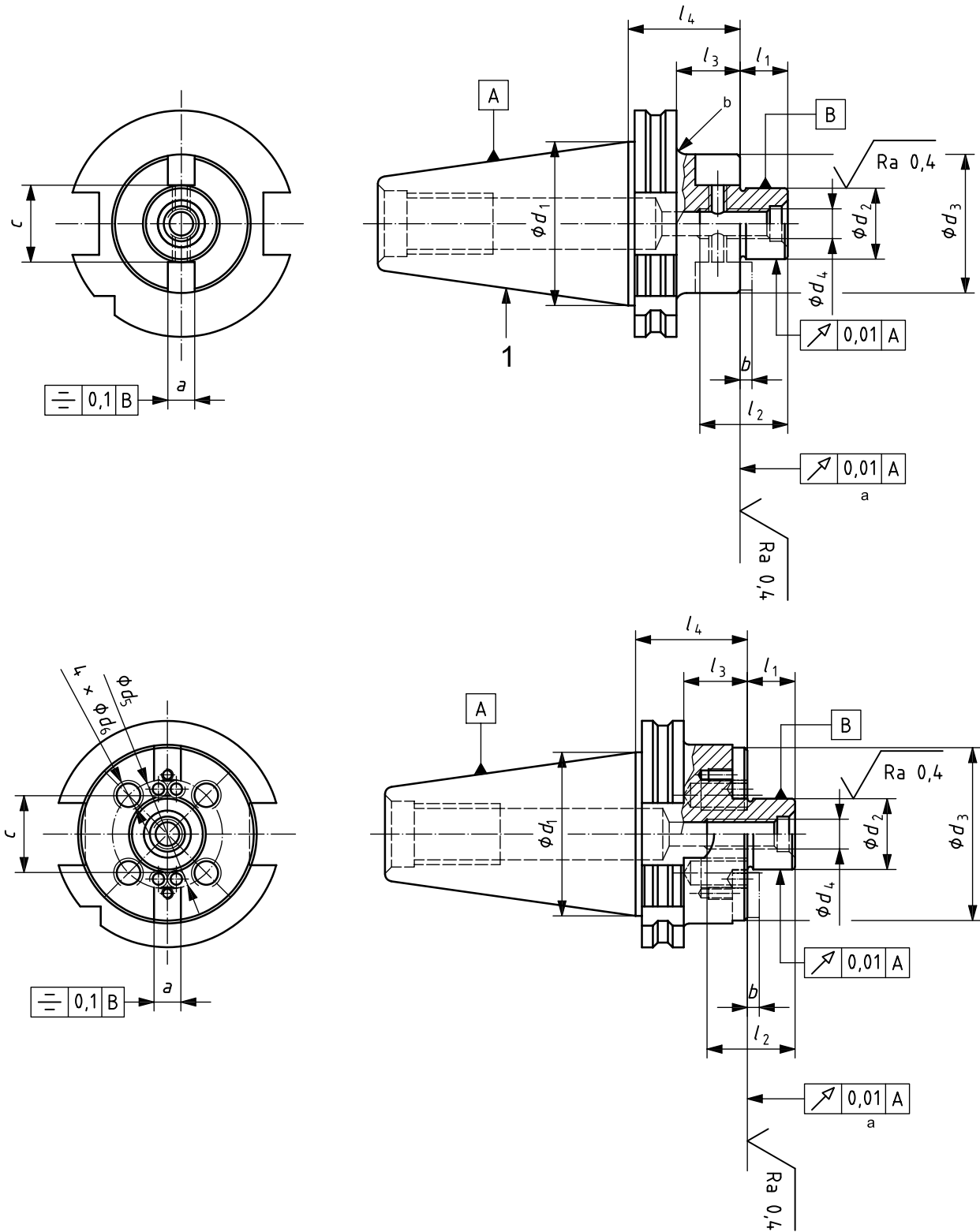
Table 3 — Regular arbors with 7/24 taper shanks for automatic tool changers

7/24 taper No.	d_1	d_2	d_3	d_4	l_1	l_2	l_3^a	l_4	a	b	c
		h6	min.		$\begin{smallmatrix} 0 \\ -1 \end{smallmatrix}$	min.			h11	h11	min.
30	31,75	16	32	M8	17	20	24,9	44	8	5	17
		22	40	M10	19	22	24,9	44	10	5,6	22,5
		27	48	M12	21	26	24,9	60	12	6,3	28,5
40	44,45	16	32	M8	17	20	24,9	44	8	5	17
		22	40	M10	19	22	24,9	44	10	5,6	22,5
		27	48	M12	21	26	24,9	44	12	6,3	28,5
		32	58	M16	24	30	39,9	60	14	7	33,5
		40	70	M20	27	34	39,9	60	16	8	44,5
45	57,15	22	40	M10	19	22	24,9	44	10	5,6	22,5
		27	48	M12	21	26	24,9	44	12	6,3	28,5
		32	58	M16	24	30	39,9	44	14	7	33,5
		40	70	M20	27	34	39,9	60	16	8	44,5
50	69,85	22	40	M10	19	22	24,9	44	10	5,6	22,5
		27	48	M12	21	26	39,9	44	12	6,3	28,5
		32	58	M16	24	30	39,9	44	14	7	33,5
		40	70	M20	27	34	39,9	60	16	8	44,5
		50	90	M24	30	40	39,9	60	18	9	55

^a Values given only for information.

3.3.2 Enlarged contact surface arbors with 7/24 taper shanks for automatic tool changers

The dimensions of arbors with 7/24 taper shanks with enlarged contact surface for automatic tool changers are shown in Figure 3 and given in Table 4.



Key

- 1 7/24 taper in accordance with ISO 7388-1
- a Not convex.
- b If required, undercut in accordance with ISO 7388-1.

NOTE This diagram is schematic and is not intended to specify a given design.

Figure 3 — Enlarged contact surface arbors with 7/24 taper shanks for automatic tool changers

Table 4 — Enlarged contact surface arbors with 7/24 taper shanks for automatic tool changers

7/24 taper No.	d_1	d_2	d_3	d_4	d_5	d_6	l_1	l_2	l_3^a	l_4	a	b	c
		h6	min.				$\begin{smallmatrix} 0 \\ -1 \end{smallmatrix}$	min.			h11	h11	min.
30	31,75	16	38	M8	—	—	17	20	15,9	35	8	5	17
		22	45	M10	—	—	19	28	15,9	35	10	5,6	24,5
		27	60	M12	—	—	21	32	30,9	50	12	6,3	30,5
40	44,45	16	38	M8	—	—	17	20	15,9	35	8	5	17
		22	48	M10	—	—	19	28	15,9	35	10	5,6	24,5
		27	60	M12	—	—	21	32	15,9	45	12	6,3	30,5
		32	78	M16	—	—	24	36	30,9	50	14	7	33,5
		40	89	M20	66,7	M12	27	45	30,9	50	16	8	44,5
45	57,15	22	48	M10	—	—	19	28	15,9	35	10	5,6	24,5
		27	60	M12	—	—	21	32	20,9	45	12	6,3	30,5
		32	78	M16	—	—	24	36	30,9	50	14	7	33,5
		40	89	M20	66,7	M12	27	45	35,9	50	16	8	44,5
50	69,85	27	60	M12	—	—	21	32	20,9	45	12	6,3	30,5
		32	78	M16	—	—	24	36	30,9	50	14	7	33,5
		40	89	M20	66,7	M12	27	45	30,9	50	16	8	44,5
		50	120	M24	—	—	30	50	30,9	50	18	9	55

^a Values given only for information.

4 Material

The material is left to the manufacturer's discretion, but the tensile strength shall be at least 800 N/mm².

Hardness shall be 56 (+4) HRC.

Bibliography

- [1] ISO 8015, *Technical drawings — Fundamental tolerancing principle*

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